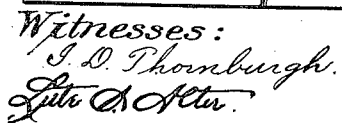


APPLICATION FILED FEB. 2, 1911.

Patented May 27, 1913.

Fig. 1.



Inventor:

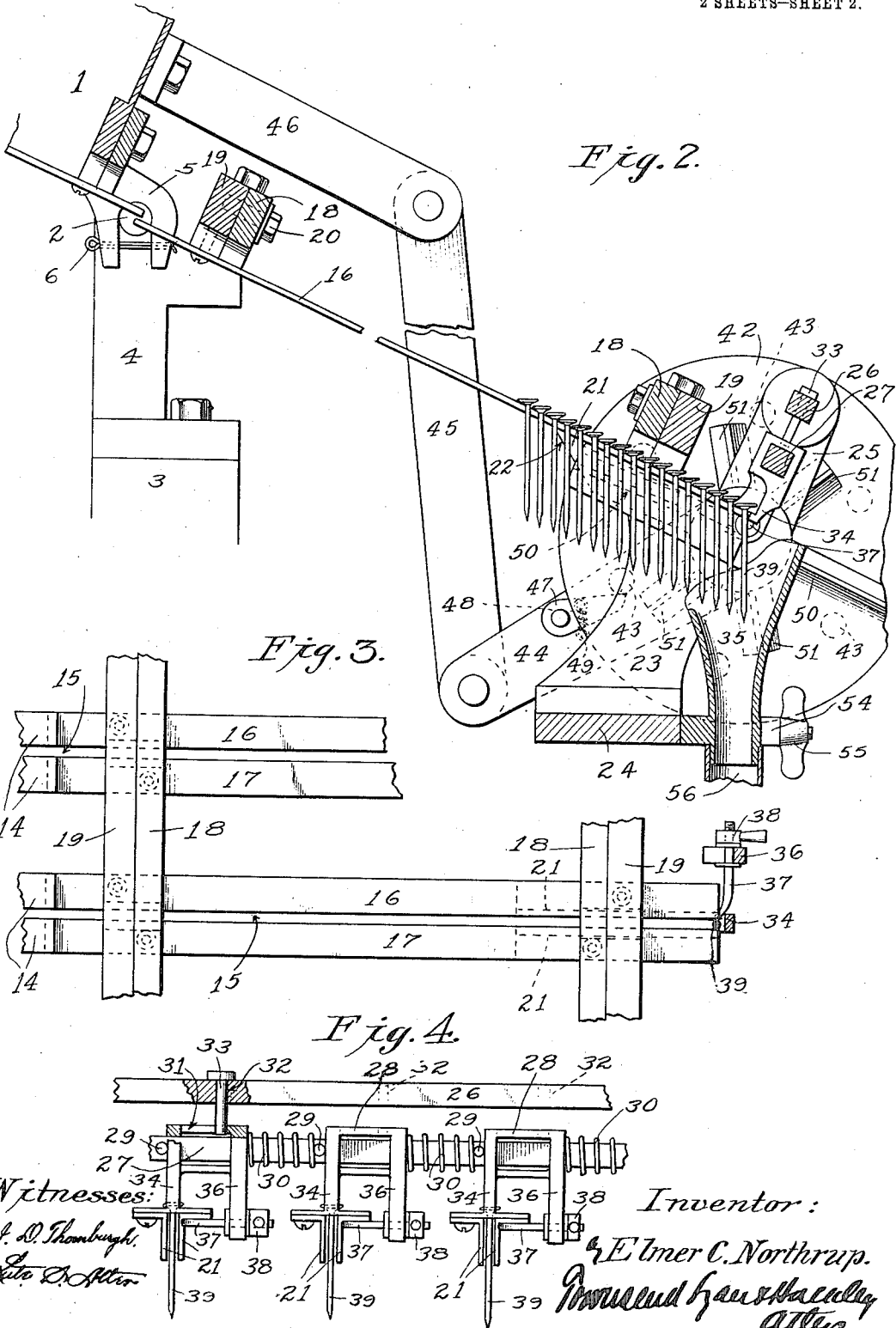
Inventor
x³ *Elmer C. Northrup.*
Witnessed by *James Mackey*
attor.

E. C. NORTHRUP.
BOX NAILING MACHINE.
APPLICATION FILED FEB. 2, 1911.

1,063,171.

Patented May 27, 1913.

2 SHEETS-SHEET 2.



UNITED STATES PATENT OFFICE.

ELMER C. NORTHRUP, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO AUTOMATIC MACHINE COMPANY, OF SAN FRANCISCO, CALIFORNIA, A CORPORATION OF CALIFORNIA.

BOX-NAILING MACHINE.

1,063,171.

Specification of Letters Patent.

Patented May 27, 1913.

Original application filed February 23, 1909, Serial No. 479,840. Divided and this application filed February 2, 1911. Serial No. 606,212.

To all whom it may concern:

Be it known that I, ELMER C. NORTHRUP, a citizen of the United States, formerly residing at Los Angeles, in the county of Los Angeles and State of California, and now residing at San Francisco, in the county of San Francisco and State of California, have invented a new and useful Box-Nailing Machine, of which the following is a specification.

This application is a division of a former application on box making machines filed February 23, 1909, Serial No. 479,840.

Referring to the drawings: Figure 1 is a vertical section on an enlarged scale on line x^1-x^1 Fig. 1. Fig. 3 is a plan view of the slotted nail chute. Fig. 4 is a front elevation of the nail feeding device.

A nail box 1 is pivoted on two pins 2 at the top of the frame 3, each pin projecting from a bracket 4 which is secured to the frame 3, there being slotted eyes 5 hinged on pivots 2 which enable the box to be easily removed. Cotter pins 6 prevent accidental displacement of the box. The eyes 5 are cast with the sides of the box 1. As shown in Fig. 3, two links 7 are pivotally secured to a bracket 8 on the box 1 and the lower ends of the links 7 are connected by a cross bar 9. The center of the cross bar 9 is pivotally engaged by an arm 10 which is in turn pivoted on a shaft 11. A roller 12 is provided on the oscillating arm 13, so that as the latter oscillates, the roller 12, acting against lever 10, will reciprocate the link 7 and oscillate the nail box 1. The bottom of the box 1 is provided with a series of ways 14, thus forming slots 15 between each two adjacent ways, into which slots 15 the nails are shaken by the oscillations of the nail box. As shown in Figs. 2 and 3, a series of ways 16 and 17 extends on a slant down from the front of the box 1. The ways 17 are secured to a bar 18 and the ways 16 are secured to a bar 19. The bars 19 are secured to the frame of the machine, while the bars 18 are slotted and slidably secured to bars 19 by cap screws 20, so that the bars 18 may be adjusted on bars 19, varying the width of the slots between ways 16 and 17.

The ends of the ways 14 lap over the upper ends of the ways 16 and 17 and the nails which hang down in the slots 15 slide by gravity into the series of slots between the ways 16 and 17. Secured to the lower faces of the ways 16 and 17 are wings 21 which have beveled edges 22 serving to straighten up the nails. In descending the ways 16 and 17, the nails become tilted laterally at various angles, but when each nail arrives at the plates 21, the upper part of the nail is first engaged by the upper portion of the inclined edges 22 and as the nail progresses a gradually increasing length of nail is engaged between the plates 21, so that each nail is gradually brought to a vertical position before it arrives at the lower end of the ways.

Two brackets 23 are fastened at opposite sides of the machine, being secured to a bar 24, and each bracket 23 has an arm 25. Slidably mounted in the upper ends of arms 25 is a square rod 26 and slidably mounted in arms 25 below the rod 26 is a square rod 27. Slidably mounted on the rod 27 is a series of U-shaped brackets 28 and a series of studs 29 on the rod 27 act as abutments against which the respective brackets 28 are pressed by springs 30. Each bracket 28 has a slot 31 and the rod 26 is provided with a series of pin holes 32 which are adapted to receive pins 33, which pins are adapted to project into the adjacent slot 31. In the present machine only two studs 33 are used for a reason to be explained. An arm 34 of each bracket 28 normally stands in front of the slot between ways 16 and 17, as clearly indicated in Fig. 4. By moving the rod 27 to the left, the arms 34 will uncover the slots between ways 16 and 17 and permit the nails to drop from the ways into flared mouths 35. The other arm 36 of each bracket 28 carries a pin 37 having a pointed curved end, as clearly shown in Fig. 5, and each pin is detachably held in place by a nut 38.

39 designates the nails. As the arms 34 move to the left and uncover the slots to release the nails, the curved pins 37 pass behind the outermost nail in each slot and strip it positively from the slot. Should there be certain nails which are not required

in the nailing operation, the slots between the ways 16 and 17 which deliver such nails may be kept closed by preventing the movement of the arms 34 of brackets 28. This is accomplished by inserting a pin 33, so that it engages in a slot 31 in the bracket which it is desired to hold stationary. Thus, as in Fig. 6, the bracket at the left is held stationary by the pin 33, while the rod 27 moves to the left and carries with it the other brackets 27 which are carried along by the springs 30.

As shown in Fig. 1, two pins 33 are arranged to prevent movement of the two outermost brackets 28, as nails which are controlled by those brackets are not required in the nailing operation. A short shaft 41 is mounted in one of the brackets 23 at the right hand side of the machine, as shown in Fig. 1, and loosely mounted thereon is a disk 42 having pins 43. Pivoted on the shaft 41 is an arm 44 which is connected by a link 45 with an arm 46 which projects from the nail box 1. A pawl 47 is pivoted on the arm 44 and is yieldingly held by a spring 48 against a pin 49 on the arm 44. Thus as the nail box 1 oscillates, the pawl 47 being operated by the rocking link 44, will operate against the pin 43 and actuate the disk 42 one-sixth of a revolution. The inner face of the disk 42 is provided with two long radially arranged cam faces 50 and with four shorter cam faces 51. The path of movement of the two long cam faces 50 is across the ends of both rods 26 and 27, while the path of movement of the short cam faces 51 is across the end of the lower rod 27 only. Thus, when a long cam face 50 reaches operative position, it acts against the ends of both rods 26 and 27 and shifts them to the left, thereby moving pins 33 and permitting all of the brackets 28 to move to the left, thereby uncovering all of the slots and allowing nails from each slot to be expelled. When the short cam face 51 arrives at operative position, it shifts only the lower rod 27 and as the upper rod 26 remains stationary the brackets 28 which are engaged by pins 33 remain stationary and nails from the slots associated therewith are not expelled. Both rods 26 and 27 are retracted and normally held to the right by two coil springs 52, as clearly shown in Fig. 1.

What I claim is:

1. In a box making machine, a series of inclined slotted ways, a slidable rod at the lower ends of said ways, a series of brackets slidably mounted on said rod, an abutment on the rod for each bracket, a spring pressing each bracket against its abutment, each bracket having two arms, one of which normally closes a slot in the adjacent way when in normal position, a curved pin carried by the other arm of each bracket and adapted

to remove a nail from the slotted way when the bracket is shifted, means for operating said rod to shift said brackets, and means for restraining the shifting movement of any of said brackets without preventing the shifting movement of said rod.

2. In a box making machine, inclined slotted ways for guiding the nails, a slidable rod at the lower ends of said ways, a series of brackets slidably mounted on said rod, each bracket having an arm normally closing the slot in the adjacent way, the other arm of each bracket being provided with a finger for stripping a nail from the adjacent way when the bracket is shifted to uncover the slot, means for yieldingly holding each bracket in a certain relative position on said rod, a second rod adjacent to the first rod, means for detachably engaging any of said brackets with the second rod, means for imparting simultaneous movement to both rods to shift all of the brackets, and means for shifting the first named rod only, whereby those brackets which are engaged with the second named rod are restrained from movement while the other brackets shift with the first rod.

3. In a box making machine, inclined slotted ways for guiding the nails, a slidable rod at the lower ends of said ways, a series of brackets slidably mounted on said rod, each bracket having an arm normally closing the slot in the adjacent way, the other arm of each bracket being provided with a finger for stripping a nail from the adjacent way when the bracket is shifted to uncover the slot, means for yieldingly holding each bracket in a certain relative position on said rod, a second rod adjacent to the first rod, means for detachably engaging any of said brackets with the second rod, a cam at the end of said rods, said cam having a set of projections with a path of movement against the end of one only of said rods, certain of said projections having a path of movement against the ends of both of said rods.

4. In a box making machine, inclined slotted ways for guiding the nails, a slidable rod at the lower ends of said ways, a series of brackets slidably mounted on said rod, each bracket having an arm normally closing the slot in the adjacent way, the other arm of each bracket being provided with a finger for stripping a nail from the adjacent way when the bracket is shifted to uncover the slot, means for yieldingly holding each bracket in a certain relative position on said rod, a second rod adjacent to the first rod, means for detachably engaging any of said brackets with the second rod, a cam at the end of said rods, said cam having a set of projections with a path of movement against the end of one only of said rods, certain of said projections having a path of movement

against the ends of both of said rods, a piv-
oted hopper for delivering nails to said
ways, a rock lever pivoted adjacent said
cam, an arm and a link connecting said rock
5 lever to said cam, a series of pins on said
cam, and a pawl on said rock lever for op-
erating against said pins to actuate the cam.

In testimony whereof, I have hereunto set
my hand at Los Angeles California, this 4
day of January, 1911.

ELMER C. NORTHRUP.

In presence of—

G. T. HACKLEY,

FRANK L. A. GRAHAM.
